

What is claimed is:

1. A thermoplastic compound, comprising:  
a macrocyclic poly(alkylene dicarboxylate) oligomer and an effective amount of  
5 a property-modifying additive selected from the group consisting of a thermal  
conductivity additive, an electrical conductivity additive, a sound dampening  
additive, an ionizing-radiation-opacity additive, an atomic-particle-moderating  
additive, and combinations thereof.
- 10 2. The thermoplastic compound according to Claim 1, wherein the  
macrocyclic poly(alkylene dicarboxylate) oligomer is cyclic polybutylene  
terephthalate or cyclic polyethylene terephthalate.
- 15 3. The thermoplastic compound according to Claim 1, wherein the  
property-modifying additive is a thermal conductivity additive selected from the  
group consisting of pitch carbon, graphite, diamond, metal nitrides such as  
boron nitride and aluminum nitride, nanotubes of carbon and boron nitride,  
titanium diboride, cobalt, zinc, molybdenum, iridium, silicon, rhodium,  
magnesium, tungsten, beryllium, aluminum, gold, copper, silver, and  
20 combinations thereof.
- 25 4. The thermoplastic compound according to Claim 1, wherein the  
property-modifying additive is an electrical conductivity additive selected from  
the group consisting of carbon black, silver, copper, stainless steel powder or  
fibers, graphite, zinc, aluminum, carbon nanotubes, manganese, bismuth,  
samarium, titanium, zirconium, lead, antimony, vanadium, chromium, tin,  
palladium, platinum, iron, nickel, zinc, cobalt, molybdenum, tungsten, iridium,  
indium, rhodium, magnesium, beryllium, aluminum, gold, silver, magnetite,  
bronze, brass, and combinations thereof.

30

5. The thermoplastic compound according to Claim 1, wherein the property-modifying additive is a sound dampening additive selected from the group consisting of tungsten, barium sulfate, zirconium sulfate, calcium sulfate, lead, tungsten, gold, platinum, iridium, osmium, rhenium, tantalum, hafnium, palladium, rhodium, borite, magnetite, hematite, zirconia, ceramic beads, chromite, and combinations thereof.

6. The thermoplastic compound according to Claim 1, wherein the property-modifying additive is an ionizing-radiation-opacity additive selected from the group consisting of tungsten, lead, zirconium, graphite, silicon, indium, aluminum, iridium, boron, cadmium, europium, samarium, and combinations thereof.

7. The thermoplastic compound according to Claim 1, wherein the property-modifying additive is an atomic-particle-moderating additive selected from the group consisting of tungsten, lead, zirconium, graphite, silicon, indium, aluminum, iridium, boron, cadmium, europium, samarium, and combinations thereof.

8. The thermoplastic compound according to Claim 1, wherein the macrocyclic poly(alkylene dicarboxylate) oligomer is cyclic polybutylene terephthalate.

9. A method of modifying properties of a macrocyclic poly(alkylene dicarboxylate) oligomer, comprising the step of mixing into the macrocyclic poly(alkylene dicarboxylate) oligomer a property-modifying additive selected from the group consisting of a thermal conductivity additive, an electrical conductivity additive, a sound dampening additive, an ionizing-radiation-opacity additive, an atomic-particle-moderating additive, and combinations thereof.

10. The method according to Claim 9, wherein the macrocyclic poly(alkylene dicarboxylate) oligomer is cyclic polybutylene terephthalate or cyclic polyethylene terephthalate.

5           11. The method according to Claim 9, wherein the property-modifying additive is a thermal conductivity additive selected from the group consisting of pitch carbon, graphite, diamond, metal nitrides such as boron nitride and aluminum nitride, nanotubes of carbon and boron nitride, titanium diboride, cobalt, zinc, molybdenum, iridium, silicon, rhodium, magnesium, tungsten,  
10   beryllium, aluminum, gold, copper, silver, and combinations thereof.

          12. The method according to Claim 9, wherein the property-modifying additive is an electrical conductivity additive selected from the group consisting of carbon black, silver, copper, stainless steel powder or fibers, graphite, zinc,  
15   aluminum, carbon nanotubes, manganese, bismuth, samarium, titanium, zirconium, lead, antimony, vanadium, chromium, tin, palladium, platinum, iron, nickel, zinc, cobalt, molybdenum, tungsten, iridium, indium, rhodium, magnesium, beryllium, aluminum, gold, silver, magnetite, bronze, brass, and combinations thereof.

20           13. The thermoplastic compound according to Claim 9, wherein the property-modifying additive is a sound dampening additive selected from the group consisting of tungsten, barium sulfate, zirconium sulfate, calcium sulfate, lead, tungsten, gold, platinum, iridium, osmium, rhenium, tantalum, hafnium,  
25   palladium, rhodium, borite, magnetite, hematite, zirconia, ceramic beads, chromite, and combinations thereof.

          14. The method according to Claim 9, wherein the property-modifying additive is an ionizing-radiation-opacity additive selected from the group

consisting of tungsten, lead, zirconium, graphite, silicon, indium, aluminum, iridium, boron, cadmium, europium, samarium, and combinations thereof.

15           15. The method according to Claim 9, wherein the property-modifying additive is an atomic-particle-moderating additive selected from the group consisting of tungsten, lead, zirconium, graphite, silicon, indium, aluminum, iridium, boron, cadmium, europium, samarium, and combinations thereof.

10           16. The method according to Claim 9, wherein the macrocyclic poly(alkylene dicarboxylate) oligomer is cyclic polybutylene terephthalate.

17. An article made from the thermoplastic compound of Claim 1.

15           18. The article according to Claim 17, wherein the macrocyclic poly(alkylene dicarboxylate) oligomer is cyclic polybutylene terephthalate or cyclic polyethylene terephthalate.

19. The article according to Claim 17, wherein the thermal conductivity additive is selected from the group consisting of pitch carbon, graphite, diamond, metal nitrides such as boron nitride and aluminum nitride, nanotubes of carbon and boron nitride, titanium diboride, cobalt, zinc, molybdenum, iridium, silicon, rhodium, magnesium, tungsten, beryllium, aluminum, gold, copper, silver, and combinations thereof, and

              wherein the electrical conductivity additive is selected from the group consisting of carbon black, silver, copper, stainless steel powder or fibers, graphite, zinc, aluminum, carbon nanotubes, manganese, bismuth, samarium, titanium, zirconium, lead, antimony, vanadium, chromium, tin, palladium, platinum, iron, nickel, zinc, cobalt, molybdenum, tungsten, iridium, indium, rhodium, magnesium, beryllium, aluminum, gold, silver, magnetite, bronze, brass, and combinations thereof.

20. The article of Claim 17, wherein the sound dampening additive is selected from the group consisting of tungsten, barium sulfate, zirconium sulfate, calcium sulfate, lead, tungsten, gold, platinum, iridium, osmium, rhenium, tantalum, hafnium, palladium, rhodium, borite, magnetite, hematite,  
5 zirconia, ceramic beads, chromite, and combinations thereof,

wherein the ionizing-radiation-opacity additive is selected from the group consisting of tungsten, lead, zirconium, graphite, silicon, indium, aluminum, iridium, boron, cadmium, europium, samarium, and combinations thereof, and

10 wherein the atomic-particle-moderating additive is selected from the group consisting of tungsten, lead, zirconium, graphite, silicon, indium, aluminum, iridium, boron, cadmium, europium, samarium, and combinations thereof.

15